

In this regard, the word "assimilable" in claim 2 has been qualified to indicate that the first component is a "microorganism assimilable" carbon containing composition. There is plenty support in the application as filed for this amendment, as, for example, at page 10, line 22.

In claim 23, the word "reduction" has been qualified by addition of the words "to less than 200cSt to allow delivery by spray or other dispersion methods". Support for this amendment can be found in the original specification at, for example, page 17, lines 20 and 21.

In view of these claim amendments, withdrawal of the rejection under 35 USC 112, second paragraph,, is requested.

(ii) 35 USC 102

Claims 1-3, 5-12, 14, 16-18, 20-21 and 23-24 are rejected under 35 USC 102(b) as being anticipated by Tellier. The Examiner summarizes the elements Tellier is alleged to disclose, and concludes that the "anticipatory composition must possess them because it is the same composition as that claimed" (emphasis added).

Claims 1, 2, 5, 8, 11, 12, and 16-23 are rejected under 35

USC 102(b) as being anticipated by Freiesleben. Once more, the Examiner summarizes the elements Freiesleben is alleged to disclose, and concludes that the "anticipatory composition *must* possess them because it is the same composition as that claimed" (emphasis added).

For the reasons set forth below, the Examiner's findings and conclusions are traversed. In this regard, it must be underscored that a claim in a patent application is anticipated (i.e., lacks novelty) if all of its elements are present in a single reference in the prior art. It is submitted that the two references relied upon by the Examiner fall well short of this requirement.

(2) The Claim Amendments

Claim 1 now includes added material which help to clearly distinguish the claimed composition from those of the cited references. Importantly, all of the three components are non-toxic or both non-toxic and non-flammable. These are very critical issues since it is intended that the composition of the invention be available for use in a closed environment such as a building. Non-toxic components are of paramount importance in the use of such a composition within a closed space. This will be discussed in further detail below.

Claim 1 also recites further elements with respect to the third component. In addition to its "non-toxic" and "non-flammable" properties, the claimed third component comprises a "microorganism assimilable carbon containing compound which is soluble in the first component and is selected to facilitate viscosity stabilization for extended storage". The overall properties of the third component in the revised claim make the claimed composition very different from the cited references.

It should also be appreciated, as is now specifically recited in claim 1, that the first, second and third components all provide an initial source for culturing microorganisms present in a pollution site being treated.

As regards the dependent claims, claim 23, for example, has been amended to recite that the limitation "to less than 200cSt to allow delivery by spray or other dispersion methods". This feature is clearly absent from the prior art cited and applied. Other dependent claims also recite patentable features. As examples only: claim 7 recites a specific compound and range of the first component; claims 9 and 10 recite droplet size; claim 19 recites a specific form of the diluent; and claim 20 recites the preferred flashpoint of the diluent.

It is emphasized that the above are examples only. All of the dependent claims add important subject matter to the claimed invention, and each deserves careful consideration.

(3) Discussion of References and Comparison with Claims

(i) Tellier

Tellier discloses a microemulsion of nutrient substances. Tellier teaches a microemulsion of the water-in-oil type, the internal phase of which is an aqueous solution of nutrient materials and the external phase of which is a liquid immiscible with water. The microemulsion is added to a hydrophobic layer to be degraded.

Tellier describes essentially techniques for combating outside pollution and especially marine pollution. This is consistent with the fact that Tellier does not distinguish in the examples in the patent between toxic or non-toxic elements. As a matter of fact, Tellier shows examples all thirty seven (37) of which contain toxic ingredients as defined by OSHA in Section 313 Title III of SARA.

Tellier also does not make any particular disclosure relating to the issue of non-flammability, defined by OSHA as having a flash point above 100F ASTM Closed Cup flammability

test. To the contrary, it includes C6 to C12 alcohols in viscosity reducing compounds to be added to the microemulsion. These compounds are all flammable.

Applicant describes in the patent application the limitations found in the prior art, and Tellier falls squarely within these limitations. Please see page 3 line 24 to page 5 line 13 for such a discussion. The claimed invention improves upon the type of composition disclosed by Tellier by specifically requiring that the first two components be both non-toxic and non-flammable in order to eliminate or substantially reduce the limitations shown in other bioremediation materials. The Examiner should appreciate that the combination of compounds that achieve this objective is not easily inferred but requires considerable investigation and testing. The presently claimed invention is an improved modification based on the type of composition described by Tellier. The presently claimed invention is safe both for use indoors and out as well as in fire hazardous environments. Tellier's composition would be inappropriate and unsafe in such indoor and fire hazardous areas.

The elements of non-toxic and non-flammable components is clear and definite. Applicant sets forth in the application, for example at page 18, lines 7 and 24, Section 313 Title III of SARA

as the definition for non-toxicity. Non-flammability is clearly defined at page 18 line 25 to page 19 line 1.

Onward

Another factor which limits the use of commercial products of the type described in Tellier is viscosity stability. The compounds set out in Tellier for the purpose of reducing viscosity do not result in a stable and useable liquid over time. The presently claimed invention has the ability to extend the shelf life and temperature stability of the composition for application to polluted surfaces over time.

Applicant has also determined that the diluent is in many ways the key component in bioremediation. The proper selection of the third component in the present invention, the diluent, enables the product composition to be used in situations which compositions of the Tellier type could not, namely, in industrial plants and inside structures.

Applicant has discovered that the addition of an ethoxylated alcohol, specifically butyl carbitoal [2-(2-butoxyethoxy)ethanol], in the percentages claimed had additional and unexpected benefits. In addition to reducing the viscosity by acting as a diluent for ease of application and distribution over hydrocarbons that have been spilled on the earth or water or

land, it acts as an additional hydrocarbon source assimilable by the microorganisms present. As such, both hydrocarbon containing components (numbers one and three in the claims) in the percentages set forth affect the oil-water interface, and are brought into contact with the microorganisms. This, in turn, and with the nutrient in the water phase, causes an unexpected surge in the growth of microorganisms.

This unexpected phenomenon was tested through examination of bioremediation rates and viscosity stability over time. The surge or culturing of the microorganisms through assimilation of both hydrocarbon containing components results in an extraordinary rate of remediation of the hydrocarbon pollutant over and above that achieved with the microorganism assimilable hydrocarbon contained in the first component alone.

While there may, therefore, be some overlap with respect to the components in the claimed invention and Tellier, the Examiner should note the specific requirements of the composition of the present invention as set out in the claims. The various components are recited as having particular features and properties which clearly set the claimed composition apart from that described in Tellier.

(ii) Freiesleben

Freiesleben can be easily differentiated from the presently claimed invention. It teaches emulsions prepared by simple agitation and containing a combination of at least one surfactant, one solvent and one emulsifier. The solvent is of selected polarity and all ingredients are of selected refractive index.

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The compositions of Freiesleben will not stay in place to culture microorganisms. The nitrogen components will not act as a fertilizer. The nitrogen-containing materials do not supply a source of nitrogen for microorganisms. In fact they are designed to emulsify tars and soils for removal. In contrast, the carbon containing hydrocarbons of the presently claimed invention do not form foams for removal of tars and soil. The nitrogen compounds are present for availability to the microorganisms that are present in the pollutant.

(iii) Conclusions

From the above discussion, in conjunction with the amended claims, it will be appreciated that the claimed invention recites a specific combination of components each of which has specified attributes and characteristics. These properties give the composition of the invention definite ability to act in more

effective and safer ways than the compositions described in the references cited. The ability to meet OSHA standards and other criteria make the composition of the invention especially suitable for indoor or confined space applications.

It is submitted that the Examiner's conclusion on the references, namely that the "anticipatory composition must possess them [the claimed properties] because it is the same composition as that claimed", is wrong. Not only do the claims, both independent and dependent, recite compositions which can be distinguished from the references, but the compositions themselves have different properties and application that are safer and more effective in use.

Favorable reconsideration of the application is therefore respectfully requested.

If the Examiner has any questions, she is invited to contact the undersigned at (818) 710-2788.

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Respectfully submitted,

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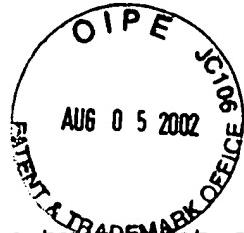
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Colin P. Abrahams

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CLAIMS - SHOWING AMENDMENTS:

1. (Amended) A composition for treatment of pollution

comprising:

a first component comprising a non-toxic, non-flammable,

5 microorganism assimilable carbon containing substance in an oil phase;

a second component comprising a non-toxic nutrient in a water phase, the second component being formed as an emulsion within the first component; and

10 a third component comprising a diluent added to the first and second components, the diluent comprising a non-toxic, non-flammable, micororganism assimilable carbon containing compound which is soluble in the first component and is selected to

facilitate viscosity stabilization for extended storage,

15 wherein the combination of the first, second and third components provide an initial source for culturing microorganisms present in a pollution site being treated.

2. A composition as claimed in claim 1 wherein the first

20 component is a[n] micororganism assimilable carbon containing composition.

3. A composition as claimed in claim 1 wherein the first component is selected from the group consisting of fatty acids, esters, alcohols and combinations thereof.

4. A composition as claimed in claim 3 wherein the first component is an alcohol surfactant with the ability to emulsify fats and oils.

5 5. A composition as claimed in claim 1 wherein oil phase is a straight chained, lipophilic carbon source.

10 6. A composition as claimed in claim 1 wherein the first component comprises an acid selected from the group consisting of oleic acid, stearic acid and combinations thereof.

7. A composition as claimed in claim 6 wherein the oleic acid or stearic acid is present in the composition in concentrations ranging between about 20% and 50% by weight.

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8. A composition as claimed in claim 1 where in the first component comprises an external phase and the second component is an internal phase, the external and internal phases of the composition being in the form of a microemulsion.

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9. A composition as claimed in claim 8 wherein the microemulsion comprises droplets have a size of about 20 to about 400 angstroms.

25 10. A composition as claimed in claim 9 wherein the

microemulsion comprises droplets have a size of about 100 to
about 200 angstroms.

11. A composition as claimed in claim 1 wherein the carbon in
5 the oil phase provides an initial source of carbon for culturing
microorganisms in a pollution site being treated.

12. A composition as claimed in claim 1 wherein the second
component comprises a source of nitrogen.

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13. A composition as claimed in claim 1 wherein the second
component comprises a source of phosphorus.

14. A composition as claimed in claim 12 wherein the nitrogen is
15 in a non-toxic form and is selected from the group consisting of
urea, cyanamide, and combinations thereof.

15. A composition as claimed in claim 13 wherein the phosphorus
is in a non-toxic form and comprises a phosphate ester.

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16. A composition as claimed in claim 1 further comprising
water.

25 17. A composition as claimed in claim 1 wherein the diluent is
present in sufficient amounts so as to facilitate the even

application of the composition to a pollution area.

18. Cancelled [A composition as claimed in claim 1 wherein the diluent is a carbon containing, non-toxic, non-flammable
5 stabilizer.]

19. A composition as claimed in claim 1 wherein the diluent is butyl carbitol [2-(2-butoxyethoxy)ethanol].

10 20. A composition as claimed in claim 1 wherein the diluent is selected so as to maintain a flashpoint for the composition above 100°C.

15 21. A composition as claimed in claim 1 wherein the diluent is present in the composition in the amount of about 15 to about 35% by weight.

20 22. A composition as claimed in claim 1 wherein the diluent comprises an ethoxylated alcohol.

25 23. (Amended) A composition as claimed in claim 1 wherein the diluent is selected to facilitate a reduction in viscosity of the first and/or second components to less than 200cSt to allow delivery by spray or other dispersion methods.

24. A composition as claimed in claim 1 comprising 20 to 50% by weight carbon, 0 to 30% by weight nitrogen, 0 to 20% by weight phosphorus.

5 25. A composition as claimed in claim 24 comprising about 22% by weight carbon, about 15% by weight nitrogen, about 25% by weight phosphorus, about 22% by weight diluent and about 18% by weight water.

10 26. A composition as claimed in claim 15 wherein the phosphate ester is lauryl phosphate.

27. A method of forming composition for treatment of a pollution site, the method comprising:

15 selecting a first component comprising a carbon containing substance in an oil phase;

 mixing a second component with the first component, the second component comprising a nutrient in a water phase, the second component being formed as an emulsion within the first 20 component; and

 diluting the first and second components in a third component comprising a diluent selected for its ability to facilitate application of the composition to a pollution site.

25 28. A method as claimed in claim 27 wherein the carbon in the

first component is formed so as be degraded by microorganisms in the pollution site to thereby expose nutrient contained in the second component.

5 29. A method as claimed in claim 27 wherein the composition is formulated so as to have a concentration of 4 to 20 parts by weight for each 80 to 96 parts by weight of contaminant at the pollution site.

10 30. A method as claimed in claim 29 wherein the composition is diluted with water to obtain the concentration.

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